NOTICE OF CANCELLATION

INCH-POUND

MIL-M-29190A(YD)
NOTICE 2
25 May 1998

MILITARY SPECIFICATION

MONITORING DEVICES, EMISSION; STACK RELATED

Military Specification MIL-M-29190A(YD), dated 25 July 1991, is hereby canceled. Future acquisition of this material should refer to Commercial Item Description A-A-50566.

(Copies of specifications, standards, drawings, and publications required by contractors in connection with the specific acquisition functions should be obtained from the contracting activity or as directed by the contracting officer.)

MILITARY INTERESTS:

Custodians:
Army - EA
Navy - YD1
Air Force - 99

Review Activities:
Navy - MS
Air Force - 82
DLA - DM
MISC - MB

CIVIL AGENCY COORDINATING ACTIVITY:

GSA-FSS

Preparing Activity:
Navy - YD1

(Project 6630-N565)

AMSC N/A

FSC 6630

INCH-POUND

MIL-M-29190A(YD)
NOTICE 1
25 July 1991

MILITARY SPECIFICATION

MONITORING DEVICES, EMISSION; STACK RELATED

MIL-M-29190A(YD), dated 29 August 1986, has been reviewed and determined to be valid for use in acquisition.

Preparing Activity:
Navy - YD

MIL-M-29190A(YD)
29 August 1986
SUPERSEDING
MIL-M-29190(YD)
15 March 1979
SUPERSEDING
MIL-R-17604C(YD)
16 June 1981

MILITARY SPECIFICATION

MONITORING DEVICES, EMISSION; STACK RELATED

This specification is approved for use by the Naval Facilities Engineering Command, Department of the Navy, and is available for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers emission monitoring devices for exhaust smoke stacks.

1.2 Classification. The devices shall be of the following types and classes as specified (see 6.2):

Type I - Opacity monitor.
Type II - Sulfur dioxide monitor.
Type III - Nitrogen oxides monitor.
Type IV - Sulfur dioxide and nitrogen oxides monitor.
Type V - Oxygen monitor.
Type VI - Data monitor.

Class A - Chart recorder.
Class B - Data processor.

1.2.1 Part number. The specification part number for items described in this specification will be identified as shown in 6.3.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commanding Officer (Code 156), Naval Construction Battalion Center, Port Hueneme, CA 93043, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

FSC 6630

AMSC N/A

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specification and standard. The following specification and standard forms a part of this specification to the extent specified herein. Unless otherwise specified, the issues of these documents shall be those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation.

SPECIFICATION

MILITARY

MIL-E-17555 - Electronic and Electrical Equipment, Accessories, and Repair Parts, Packaging and Packing of.

STANDARD

MILITARY

MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.

2.1.2 Other Government documents. The following other Government documents form a part of this specification to the extent specified herein. Unless otherwise specified, the issues shall be those in effect on the date of the solicitation.

CODE OF FEDERAL REGULATIONS (CFR)

Title 40, Environmental Protection

Part 60 - Standards of Performance for New Stationary Sources, Appendix B.

(Application for copies should be addressed to the Superintendent of Documents, Government Printing office, Washington, DC 20402.)

(Copies of specifications, standards, and publications required by manufacturers in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting officer.)

2.2 Other publications. The following document(s) form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of the documents which are DOD adopted shall be those listed in the issue of the DODISS specified in the solicitation. Unless otherwise specified, the issues of the documents not listed in the DODISS shall be the issue of the non-Government documents which is current on the date of the solicitation.

AMERICAN NATIONAL STANDARDS INSTITUTE, INC. (ANSI)

C39.1 - Electrical Analog Indicating Instruments, Requirements for.
C39.6 - Electrical Instrumentation, Digital Measuring, Instruments for.

(Application for copies should be addressed to the American National Standards Institute, Inc., 1430 Broadway, New York, NY 10018.)

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

250 - Enclosures For Electrical Equipment (1000 Volts Maximum).

(Application for copies should be addressed to the National Electrical Manufacturers Association, 2101 L Street, N.W., Washington, DC 20037.)

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

70 - National Electrical Code.

(Application for copies should be addressed to the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.)

(Non-Government standards and other publications are normally available from the organizations which prepare or which distribute the documents. These documents also may be available in or through libraries or other informational services.)

2.3 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein (except for associated detail specifications, specification sheets or MS standards), the text of this specification shall take precedence. Nothing in this specification, however, shall supersede applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 First article. When specified (see 6.2), the contractor shall furnish an emission monitoring device for each type and class ordered in the contract for first article inspection and approval (see 4.2.1 and 6.5).

3.2 Standard commercial product. The emission monitoring device shall, as a minimum, be in accordance with the requirements of this specification and shall be the manufacturer’s standard commercial product. Additional or better features which are not specifically prohibited by this specification but which are a part of the manufacturer’s standard commercial product, shall be included in the emission monitoring device being furnished. A standard commercial product is a product which has been sold or is being currently offered for sale on the commercial market through advertisements or manufacturer’s catalogs, or brochures, and represents the latest production model.

3.3 Materials. Materials used shall be free from defects which would adversely affect the performance or maintainability of individual components or of the overall assembly. Materials not specified herein shall be of the same quality used for the intended purpose in commercial practice. Unless otherwise specified herein, all equipment, material, and articles incorporated in the work covered by this specification are to be new and fabricated using materials produced from recovered materials to the maximum extent possible without jeopardizing the intended use. The term "recovered materials" means materials which have been collected or recovered from solid waste and reprocessed to become a source of raw materials, as opposed to virgin raw materials. None of the above shall be interpreted to mean that the use of used or rebuilt products are allowed under this specification unless otherwise specified.

3.4 Performance. When required by plant size to be monitored the monitors shall be in conformance with federal, state, and local regulations in effect on the date of invitation for bids or request for proposal. Routine maintenance, repair, and replacement of component parts and modules shall be capable of being performed by Journeyman boiler plant operators, and Journeyman electronic technicians. Monitors specified for use on 25OMBTU and larger plants shall meet the requirements of CFR Part 60 Appendix B Performance Specifications 1, 2, and 3 and all units shall be as specified herein, taking into account indicated factors such as: installation, plant size, location, duct/stack type and diameter, gas temperature range, corrosive components, condensate, surface and distance between the sensor(s) and the control unit(s) (see 6.2).

3.4.1 Type I, opacity monitor. The opacity monitor when used in conjunction with a type VI class B data processor, shall as a system, conform to the requirements of CFR Part 60 Appendix B, Performance Specification 1. The system shall be tailored to perform as specified herein.

3.4.1.1 Control unit light display. The control unit shall provide a minimum of "clear", "warning", and "violation" display lights. Independent controls shall be provided for adjusting warning and violation light activation from 0 to 100 percent opacity and 0 to 90 second delay to prevent momentary false alarms.

3.4.1.2 Control unit meter display. Meter display shall be analog or digital unless one type is specified (see 6.2). If analog display is used it shall conform to the requirements of ANSI C39.1. The scale shall be graduated linearly from 0 to 100 percent opacity in 2 percent increments. If a digital display is used it shall conform to the requirements of ANSI C39.6. The numerals shall indicate the percent opacity from 0 to 100 percent in one percent increments. The numerals shall be a minimum of 1/4 inches high and distinguishable at a minimum distance of 6 feet. Meters shall be accurate within +/- 2 percent of full scale.

3.4.1.3 Relay contacts. Single-pole single-throw hermetically sealed contacts, not less than 5 ampere, 120 volt (v), 60 Hertz (Hz) shall be provided for the visual warning signals and when specified, audible warning signals (see 6.2). The system shall warn of filter blockage, blower motor failure, window soilage, failure in the opacity monitor, and when opacity limits are exceeded.

3.4.1.4 Analog outputs. The control unit (monitor) shall provide 4-20 milliampere outputs suitable for driving type VI data monitors.

3.4.1.5 Stack mounted equipment. The monitor shall perform the measurements in situ without any sample extraction or conditioning. Stack mounted equipment shall be equipped with an air purge system providing filtered, moisture/oil free air for minimizing the amount of dirt and dust on the optical windows. Continuous long term sealed protection shall be provided for optical lenses or reflective surfaces which could be damaged or rendered ineffective due to exposure to the stack gas stream in the event of air purge system failure. When specified in the contract (see 6.2), opacity monitors shall have provisions to automatically switch to a stand-by air supply (plant air), in the event of air purge system failure, and the system shall continue to monitor opacity. The air purge system shall be equipped with easily replaceable filters. The maximum stack pressure for the air purge system shall be as specified (see 6.2). Outdoor mounted systems shall be protected from the elements and inclement weather by NEMA 250, type 4, completely sealed weather covers. The light source shall have a minimum of 20,000 hours of in-use life.

3.4.1.6 Mounting hardware. Adjustable adapter flanges, thermal insulating blocks, and mounting hardware shall be included for simple, precise optical alignment.

3.4.1.7 Jet engine test cell. When specified for use on a jet engine test cell (see 6.2), the monitor shall withstand vibration when tested in accordance with 4.5.1.1.

3.4.1.8 Calibration. When required by federal, state, and local regulations the monitor shall perform automatic on-stack zero/span calibration without requiring personnel check and at selected intervals in accordance with local CFR requirements. A manual override at the control unit shall permit manual activation for zero/span calibration at any time by the operator without boiler shutdown. The opacity monitor calibration error shall not exceed 3 percent opacity, zero and calibration drift shall not exceed 2 percent opacity in 24 hours and response time shall not exceed 90 percent in 10 seconds.

3.4.1.9 Replacement of parts. Replacement of component parts or modules shall be capable of being performed by a Journeyman electronic technician after referring to the operators, maintenance, and repair manual.

3.4.1.10 Operator maintenance. Operator maintenance shall be capable of being performed by the experienced plant operator after indoctrination by contractor technicians, familiarization with the system and with the aid of operator and maintenance manuals. Operator maintenance includes cleaning of optical windows, replacement of optical light source bulb, optical filters, and air purge system filters, and make manual zero, span, and light intensity adjustments and calibration.

3.4.2 Type II, sulfur dioxide monitor; type III, nitrogen oxides monitor; and type IV, sulfur dioxide and nitrogen oxides monitor. The type II sulfur dioxide, type III nitrogen oxides monitor, and the type IV sulfur dioxide and nitrogen oxides monitor used in conjunction with a type VI data monitor, when required, shall as a system, conform to the requirements of CFR, Performance Specification 2.

3.4.2.1 Calibration. When required by federal, state, and local regulations the monitors shall perform automatic on-stack zero and span calibration at selectable intervals of 1, 2, 4, 8, and 24 hours. A manual override at the control unit shall permit manual activation for zero and span calibration at any time by the operator.

3.4.2.2 Control unit light display. The control unit shall provide a minimum of: "warning" and "violation" lights. Independent controls shall be provided for adjusting warning and violation light actuation from 0 to full scale parts per million (ppm) and 0 to 90 second delay to prevent momentary false alarms.

3.4.2.3 Control unit meter display. Meter display shall conform to the requirements of 3.4.1.2 except that graduations shall read ppm with at least two switch selectable ranges, i.e., 0 to 1000, 0 to 3000 ppm. Range of meter shall be as specified (see 6.2).

3.4.2.4 Relay contacts. Relay contacts described in 3.4.1.3 shall be provided for visual display and when specified, audible warning signals (see 6.2).

3.4.2.5 Analog outputs. The control unit (monitor) shall provide 4-20 milliampere outputs suitable for driving type VI data monitors.

3.4.2.6 Stack mounted equipment. The monitor shall perform the measurements in situ. If the measurement technique is variable with stack gas temperature, the measurement output shall automatically compensate for these variations. The monitor shall also measure stack temperature. Stack and outdoor mounted components shall be protected from the elements and inclement weather by NEMA 250 type 4 completely sealed weather cover.

3.4.3 Type V, oxygen monitor. The oxygen monitor used in conjunction with a type VI data monitor, when required, shall as a system, conform to the requirements of CFR, Performance Specification 3. The monitor shall perform the measurements in situ, without any sample extraction or conditioning and shall be capable of providing automatic trim control and providing increased response with decreased oxygen in the stack.

3.4.3.1 Calibration. When required by federal, state, and local regulations the monitor shall perform automatic on-stack zero/span calibration without personnel check and at selected intervals in accordance with local CFR requirements. A manual override at the control unit shall permit manual activation for zero/span calibration at any time without boiler shutdown. Calibration error shall be within +/- 0.2 percent and the response time shall be 90 percent in 8 seconds. Zero/calibration drift shall not exceed 0.3 percent over a 24-hour period.

3.4.3.2 Control unit light display. The control unit shall provide a minimum of low oxygen, early warning, and alarm. Independent controls shall be provided for adjusting "warning" and "alarm" light activation from 0 to full scale, and 0 to 90 second delay to prevent momentary false alarms.

3.4.3.3 Control unit meter display. Meter display shall conform to the requirements of 3.4.1.2 except that the graduations shall read 0 to 20.9 percent oxygen in 0.1 percent increments (see 6.2).

3.4.3.4 Relay contacts. Relay contacts described in 3.4.1.3 shall be provided for visual display and when specified (see 6.2) audible warning signals.

3.4.3.5 Analog outputs. The control unit (monitor) shall provide 4-20 milliampere outputs suitable for driving type VI data monitors and fuel/air controller.

3.4.3.6 Stack mounted equipment. Stack and outdoor mounted components or systems shall be protected from the elements and inclement weather by NEMA type 12 or equivalent, completely sealed weather covers.

3.4.3.6.1 Probe. The stack probe shall be equipped with industrial duty flame arrestors to prevent flame propogation and flash-back in the probe unit. The probe shall extend a minimum of one third of the diameter of the stack or duct, at the point of measurement. The probe shall be constructed of corrosion-resistant materials and include filter, deflectors, and/or airfoils to minimize accumulation of particulates from the process gas.

3.4.5 Type VI data monitors. The type VI data monitors when used in conjunction with the type I through V monitors, shall as a system, measure the output from the monitors and record the data and generate reports when required by applicable federal, state, and local agencies without operator invention.

3.4.5.1 Class A, chart recorder. The recording chart shall move no slower than 3/4-inch per hour and be of sufficient length for a minimum 31 day continuous record. The movement of the recording mechanism shall be free and smooth and the pen shall produce a continuous record. Means shall be provided for adjusting the zero-position of the pen point and for minor recalibration. The pen shall be for marking on chart paper and shall not abrade the chart. Means shall be provided to move the pen away from the chart and to prevent it from returning to the chart until manually returned. The overall accuracy of the recorder shall be within +/- 1.5 percent of full scale.

3.4.5.2 Indicator. The recorder shall incorporate a separate indicating pointer or colored band(s) with a scale at least 6 inches long, or a 5-digit display with 2 decimal places. Digits shall be a minimum of one inch high of color to contrast with surrounding background.

3,4.5.3 Pen-movement mechanism. The pen-movement mechanism shall be actuated by mechanical, or pneumatic power transmitted by direct mechanical or pneumatic connection from the analyzing system, or by electrical power controlled by a signal from the analyzing system in such a way that performance shall be within the limits specified.

3.4.5.3.1 Pneumatic transmission. When required in the design, the connectors and other fittings shall be of a type which will allow joints to be made leakproof without putting strain on the equipment.

3.4.5.3.2 Electrical recorders. Electrical recorders shall operate when activated by a signal from the analyzing system without appreciable lag, and shall position the recording and indicating element without causing hunting, cycling, or overtravel of the recording and indicating element. Electric motors, shall be fully enclosed and shall be equipped with permanently lubricated antifriction bearings. Sliding-contact pairs shall have low and constant contact resistance and give long contact-life with negligible wear.

3.4.5.4 Class B, data processors. The class B data processor used in conjunction with types I through V monitors shall, as a tailored system, accept the outputs from stack monitors, integrate the information, permanently record the information, and when required generate reports in the format required by applicable federal, state, and local agencies without operator intervention. The data processor shall include means by restrictive password, key, or hidden switch to edit reasons for faults before generating reports without altering opacity values or times.

3.4.5.4.1 Data protection. The processor shall have protection for components from damage due to spike voltage, and loss of data due to power failure.

3.4.5.4.2 Number and type monitors. The number and type of monitors attached to the processor shall be as specified (see 6.1.1 and 6.2).

3.5 Construction.

3.5.1 Electrical. The equipment shall be suitable for operation from a single phase, 120V, 60 Hz power supply conforming to the requirements of NFPA 70. Variations of voltage between +/- 10 percent of the base power supply voltage shall not cause the equipment to operate outside the limits of performance specified.

3.5.2 Accessibility. All housed components shall be completely accessible. Parts and assemblies shall be so mounted as to be removable without damage to adjacent parts. Parts most likely to require inspection, service, or replacement shall be located so that the extent and time of disassembly required for inspection, service, or replacement is minimized.

3.6 Interface. A monitor specified for one location shall be compatible with same make monitors of other types at that location and when specified shall interface with existing equipment. The makes, models, and types of existing monitors shall be specified (see 6.2).

3.7 Technical manuals. The contractor shall furnish to the government installation and maintenance technical manuals normally furnished in commercial practice for each type monitor specified in the contract.

3.8 Identification marking. Identification shall be permanently and legibly marked directly on the monitor or on a corrosion-resisting metal plate securely attached to the monitor at the source of manufacturer. Identification shall include the manufacturer’s model and serial number, name and trademark to readily identify the manufacturer.

3.9 Workmanship. All components shall conform to the requirements of NFPA 70.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.1.1 Responsibility for compliance. All items must meet all requirements of sections 3 and 5. The inspection set forth in this specification shall become a part of the contractor’s overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of assuring that all products or supplies submitted to the Government for acceptance comply with

all requirements of the contract. Sampling in quality conformance does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to acceptance of defective material.

4.1.2 Component and material inspection. Components and materials shall be inspected in accordance with all the requirements specified herein and in applicable referenced documents.

4.2 Classification of inspections. The inspection requirements specified herein are classified as follows:

a. First article inspection (see 4.2.1).
b. Quality conformance inspection (see 4.2.2).

4.2.1 First article inspection. The first article inspection shall be performed on one each of types I through V equipped with each class of the type VI monitor ordered as a system, or on one each type and class monitor when ordered separately when a first article is required (see 3.1 and 6.2). This inspection shall include the examination of 4.4, the tests of 4.5, and, when specified, the first article pack inspection of 4.6. The first article may be either a first production item or a standard production item from the supplier's current inventory provided the item meets the requirements of the specification and is representative of the design, construction, and manufacturing technique applicable to the remaining items to be furnished under the contract.

4.2.2 Quality conformance inspection. The quality conformance inspection shall include the examination of 4.4, the tests of 4.5, and the packaging inspection of 4.6. This examination inspection shall be performed on the samples selected in accordance with 4.3.

4.3 Sampling. Sampling and inspection procedures shall be in accordance with MIL-STD-105. The unit of product shall be one monitor. All monitors offered for delivery at one time shall be considered a lot for the purpose of inspection. If an inspection lot is rejected, the contractor may rework it to correct the defects, or screen out the defective units, and resubmit for a complete reinspection. Resubmitted lots shall be reinspected using tightened inspection. If the rejected lot was screened, reinspection shall be limited to the defect causing rejection. If the lot was reprocessed, reinspection shall be performed for all defects. Rejected lots shall be separate from new lots, and shall be clearly identified as reinspected lots.

4.3.1 Sampling for examination. Examination shall be based on inspection level II and an Acceptable Quality Level of 2.5 percent defective.

4.4 Examination. Each monitor shall be examined for compliance with the requirements specified in section 3 of this specification. Any redesign or modification of the contractor's standard product to comply with specified requirements, or any necessary redesign or modification following failure to meet specified requirements shall receive particular attention for adequacy

and suitability. This element of inspection shall encompass all visual examinations and dimensional measurements. Noncompliance with any specified requirements or presence of one or more defects preventing or lessening maximum efficiency shall constitute cause for rejection.

4.5 Tests. Each unit selected shall be tested, and any unit failing to pass the following tests, as applicable, shall be rejected. A certificate of compliance from an independent laboratory, approved by the contracting officer, will be accepted as evidence that the unit has passed the required test.

4.5.1 Monitor tests. Tests for each type monitor shall be conducted in accordance with the applicable part of CFR when required, and as specified herein. The measurements for the types I through V monitors shall be performed in situ all with the type VI data monitor with class A recorder and/or class B processor attached. Checks and corrections for zero drift, calibration drift, and span drift as applicable shall be made at a maximum of 2-hour intervals.

4.5.1.1 Type I. The type I air purge system shall be tested during and after the performance test of 4.5.1 to insure that the optical windows are clean and free from dirt, dust, and moisture or condensation. After the performance test of 4.5.1, but while the monitor is still operational, the power shall be cut on the blower system to insure the proper operation of the air-flow failure alarm and if applicable, the automatic stand-by (plant air) air supply. When specified for use on a jet engine test cell the performance test shall be performed on the stack of a jet engine test cell at the location specified (see 6.2). The test period shall be at least 168 hours, not necessarily continuously without corrective maintenance, repair, replacement, or adjustment other than specified in section 3 and meet the demands of the tests of 4.5.1 and when specified subjected to environmental vibrations of frequencies and magnitude specified in the contract (see 6.2).

4.5.1.2 Types II, III, and IV. During the performance test of 4.5.1, the type II, III, and IV monitors shall measure the stack temperature.

4.5.1.3 Type VI, class B. When required data for reports required by federal, state, and local agencies shall be output automatically during the performance tests of 4.5.1.

4.6 Packaging inspection. The inspection of the preservation, packing, and marking shall be in accordance with the requirements of section 4 of MIL-E-17555. The inspection shall consist of the quality conformance inspection; and, when specified (see 6.2), a first article pack shall be furnished for examination and test within the time frame required (see 6.2).

5. PACKAGING

5.1 Preservation, packing, and marking. Presrvation, packing, and marking shall be in accordance with the requirements of MIL-E-17555 (for monitor equipment, temperature) with the level of preservation and the level of packing as specified (see 6.2).

6. REQUIREMENTS

6.1 Intended use. The emission monitoring devices are intended for use on stacks to measure the pollutants discharged into the atmosphere and to insure that the emissions are at acceptable levels and that combustion efficiency is at optimum levels. Types II, III, and IV monitors with automatic calibration are intended for use in larger plant (25OMBTU and larger) and should not be ordered for smaller plants.

6.1.1 Types VII, class B, data processor. The type VI, class B, data processor is intended for use with type II, III, and IV monitors. If any of these types of monitors are ordered, the type VI, class B, data processor should also be ordered. The type I and V monitors may also be attached to the data processor in conjunction with the type II, III, and IV monitors, but the data processor should not be ordered soley for the type I and V monitors.

6.1.2 Precaution. It should be noted that inherent problems exist when stand-by plant air is used to purge the optical windows (see 3.4.1.5). The assumption is made that "plant air" is provided by a conventional air compressor which normally produces contaminated air (oil, moisture, rust, etc.). To prevent contamination of optical windows and supply accurate air pressure and volume, special regulators, water traps, and filters must be installed near the air discharge at the optical windows. If the installation was at a freezing location and the air supply was mounted outside, there would be a problem with freezing. The built-in air purge blowers are highly reliable. They provide high volume at low pressure with less chance of moisture condensation and because there is no crankcase to cause oil vapors, the optical lens would not be contaminated from the blower. The situation with stand-by plant air would be quite different. The cost to maintain adequate pressure and the filter system would outweigh the benefits for the few times it might be activated.

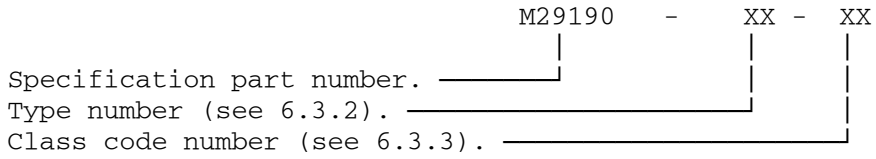
6.2 Ordering data. Acquisition documents should specify the following:

a. Title, number, and date of this specification.
b. Type(s) and class of emission monitor required (see 1.2 and 3.4.5.4.2).
c. When a first article is required for inspection and approval (see 3.1, 4.2.1, and 6.5).
d. Size, geographic location, and required factors of plant to be monitored (see 3.4).
e. Maximum stack pressure for the air purge system, stand-by plant air switchover and connection provisions, and other factors affecting installation (see 3.4 and 3.4.1.5).

f. When the warning system shall include audible warning signals (see 3.4.1.3, 3.4.2.4, and 3.4.3.4).
g. When type I is to be used on a jet engine test cell stack; vibration frequency, magnitude, and test location site (see 3.4.1.7 and 4.5.1.1).
h. Number and type of monitors to be attached to the type VI, class B processor (see 3.4.5.4.2).
i. Make, model, and type of existing equipment to be interfaced with, at each location (see 3.6).
j. When specific type meter display and range required (see 3.4.1.2, 3.4.2.3, and 3.4.3.3).
k. When a first article pack inspection is required and time frame required for submission (see 4.2.1 and 4.6).
l. Level preservation and level of packing required (see 5.1).

6.3 Definitive specification part number. The specification part number is a definitive part number which corresponds to the types and class of monitor devices covered by this specification. The specification number, and the types and class code number are combined to form the definitive specification part number.

6.3.1 Cataloging data. For cataloging purposes, part numbers for the monitor devices are assigned as follows:



6.3.2 Type. The type of the monitor devices (see 3.4.1, 3.4.2, 3.4,3, and 3.4.5) are identified by a two digit number see Table I.

TABLE I. Code number to type.

Type	Noun name	Type code no.
I	Opacity monitor	01
II	Sulfur dioxide monitor	02
III	Nitrogen oxide monitor	03
IV	Sulfur dioxide and Nitrogen oxide monitor	04
V	Oxygen monitor	05
VI	Data monitor	06

6.3.3 Class. The class of the monitor device (see 3.4.5.1 through 3.4.5.4.2) are identified by a two digit number see Table II.

TABLE II. Code number for class.

Type	Class	Name	Class code
VI	A	Chart recorder	11
	B	Data processor	22

6.4 Data requirements. When this specification is used in an acquisition and data are required to be delivered, the data requirements shall be developed as specified by an approved Data Item Description (DD Form 1664) and delivered in accordance with the approved Contract Data Requirements List (CDRL), incorporated into the contract. When the provisions of DOD FAR Supplement, Part 27, Sub-Part 27.410-6 (DD Form 1423) are invoked and the DD Form 1423 is not used, the data shall be delivered by the contract or in accordance with the contract or purchase order requirements.

6.5 First article. When a first article inspection is required, the item will be tested and should be a first article sample or it may be a standard production item from the contractor's current inventory as specified in 4.2.1. The first article should consist of one unit. The contracting officer should include specific instructions in acquisition documents regarding arrangements for examination, test, and approval of the first article.

6.6 Changes from previous issue. Asterisks are not used in this revision to identify changes with respect to the previous issue, due to the extensiveness of the changes, and the incorporation of Military Specification MIL-R-17604C(YD).

Preparing Activity:

Navy - YD

(Project 6630-N399)